

The epidemic of HIV infection in Wisconsin

***A review of case surveillance data
collected through 2004***

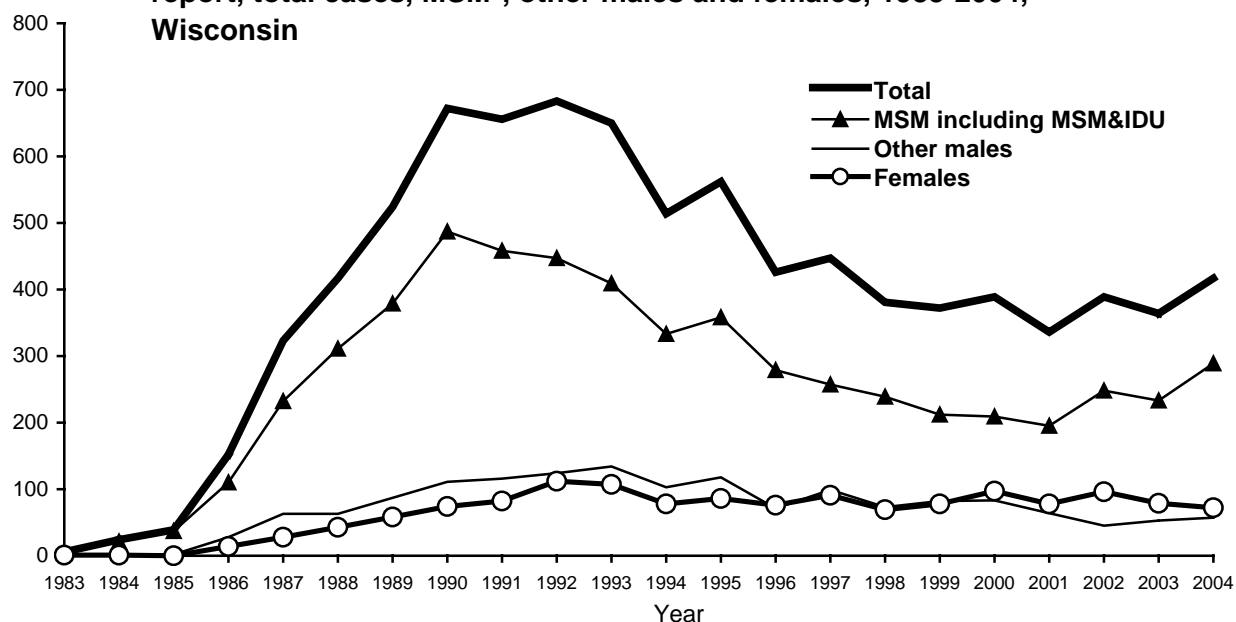
**Wisconsin AIDS/HIV Program
February 2005**

Summary

In the year 2004, 417 new cases of HIV infection were reported in Wisconsin. This brought the cumulative number of cases of HIV infection reported in Wisconsin to 8,743. Among all reported cases, 5,690 met the Centers for Disease Control and Prevention (CDC) criteria for AIDS; 3,053 have HIV infection but did not meet the AIDS case definition at the end of 2004. Wisconsin has historically had low a low rate of HIV/AIDS morbidity compared to other states. During the year 2003, the latest year the national data is available, Wisconsin had the tenth lowest AIDS case rate in the United States.

In Wisconsin, the first cases of HIV infection were reported in 1983. Throughout the 1980's, the number of reported cases of HIV infection increased each year (figure A). The decade of the 1990's marked a transition in the epidemic. During this period, the annual number of reported cases reached a peak between 1990 and 1993 (average: 665 cases) and thereafter began to decline. In 2001, 336 new cases of HIV infection were reported – the lowest number of cases since 1987.

Figure A. Number of persons reported with HIV infection, by year of report, total cases, MSM*, other males and females, 1983-2004, Wisconsin



* Adjusted for cases initially reported with unknown risk.

Between 2002 and 2004, newly reported cases increased in two of three years. The 417 new cases of HIV infection reported in 2004 were the highest number of reported cases in Wisconsin since 1997 and represented an increase of 24% compared to 2001. All of this increase can be attributed to an increase among men who have sex with men (MSM) (figure A). The number of reported cases among MSM increased by an estimated 48%. Reported cases decreased by 11% among other males (i.e., non-MSM) and decreased by 8% among females.

Deaths among persons reported with HIV infection in Wisconsin have also declined from the historic peak. Ninety-five deaths among persons reported with HIV infection in Wisconsin are known to have occurred in 2003, a 75% decline compared to the 373 deaths in 1993, the peak year. As a result of declining deaths, the number of persons reported with HIV that are presumed alive has continually increased. Over the past five years, this increase averaged 4% per year. At the end of 2004, 5,367 persons reported with HIV infection in Wisconsin were presumed to be alive, an all-time high.

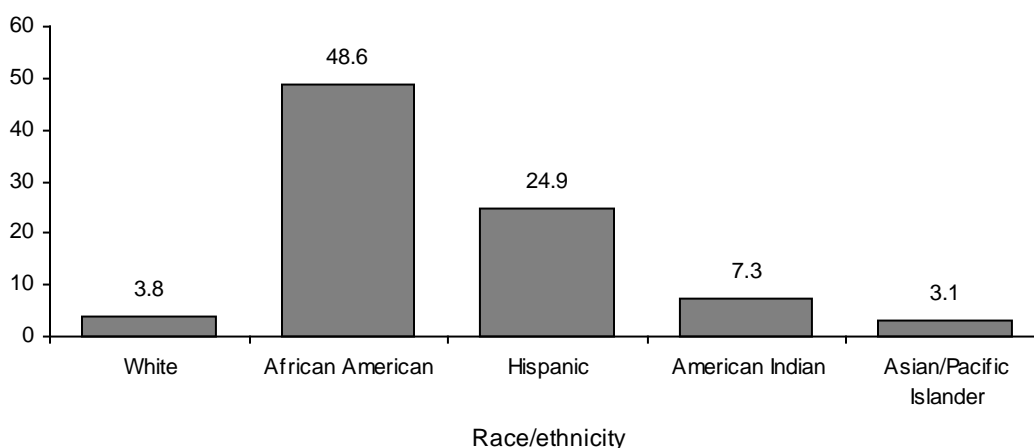
In Wisconsin, HIV infection is predominately a sexually transmitted disease with an important component related to injection drug use. Between 2000 and 2004, an estimated 55% of all reported cases of HIV

infection were among MSM. High-risk heterosexual contact was the second most commonly reported risk exposure, representing 22% of all cases reported in this period. Injection drug use was reported by 14% of cases between 2000 and 2004; 7% of cases were among MSM who also reported injection drug use.

Throughout the epidemic and continuing in recent years, males have constituted a substantial majority of persons reported with HIV in Wisconsin. Between 2000 and 2004, 78% of persons reported with HIV infection were male. This is primarily a consequence of the high number of cases reported for MSM. Excluding MSM, the numbers of cases of HIV infection reported among males and females were similar (figure A).

HIV infection has had a disproportionate effect on minority populations in Wisconsin (figure B). While racial/ethnic minorities comprise 12% of the Wisconsin population, 54% of cases of HIV infection reported between 2000 and 2004 were among members of racial/ethnic minority groups. Between 2000 and 2004, the average annual rate (i.e., cases per 100,000 population) of reported HIV infection was 13-fold greater for African Americans, seven-fold greater for Hispanics, and nearly two-fold greater for American Indians compared to the rate among whites

Figure B. Average annual rate of reported HIV infection per 100,000 population, by race/ethnicity, Wisconsin, cases reported 2000-2004



The race/ethnic disparity was even more pronounced for females. Between 2000 and 2004, 73% of females reported with HIV infection were members of race/ethnic minority groups. During these years, the average annual rate of reported cases for African American and Hispanic females was 35-fold and 14-fold greater respectively compared to white females.

The age-distribution of reported cases has been relatively consistent throughout the epidemic. For cases of HIV infection reported between 2000 and 2004, the median age at diagnosis of HIV infection was 34 years (range 0-78 years of age). Most (68%) persons reported with HIV infection were between the ages of 25 and 44 when they were first diagnosed with HIV infection.

It is important to note, however, that the age at diagnosis of HIV infection is not usually the age when HIV infection was acquired. HIV infected persons often experience a long period during which they appear and feel healthy; allowing HIV infection to remain undiagnosed for years. The Centers for Disease Control and Prevention (CDC) estimates that in the United States at least one half of all persons with HIV infection acquired the disease before they were 25 years old.

Since the beginning of the epidemic HIV infection has been reported from every county in Wisconsin. Among cases reported between 2000 and 2004, 51% were from the Milwaukee MSA. The average rate of

reported cases was similar in the Milwaukee MSA and the Dane County MSA. Lower rates were observed in the other two metropolitan categories.

Conclusion

The epidemiologic profile described in this analysis reiterates many of the findings from similar analyses in recent years. While an important component of the epidemic is associated with injection drug use, sexual transmission continues to be the dominant mode of HIV transmission in Wisconsin. Sexually transmitted HIV infection occurs both among heterosexual men and women and among men who have sex with men, but the impact is not equal. Between 2000 and 2004, 2.5 cases of HIV infection were reported among men who have sex with men for every one case attributed to high-risk heterosexual behavior.

The “face” of HIV infection in Wisconsin remains predominately male, with an important minority of cases occurring among females. Persons with HIV infection continue to be diagnosed in their late twenties and early thirties, although most are probably infected in their late teens and twenties. HIV infection has occurred in all populations and all parts of the state. However, as the epidemic evolves, it continues to exert a disproportionate effect on racial and ethnic minority communities in Wisconsin.

While these characteristics are consistent with other profiles from recent years, analysis of the 2004 HIV surveillance data suggests an important new finding. After a decade long downward trend, the number of newly reported cases of HIV infection increased for two of the past three years. In 2004 the number of new cases reached the highest number in seven years.

As pointed out in this analysis, the increase in reported cases was restricted to men who have sex with men. Reported cases among females and non-MSM males declined. These findings mirror national trends reported by the CDC. The CDC HIV/AIDS Surveillance Report for the end of year 2003 showed that in 33 areas with name-based HIV infection reporting the number of newly diagnosed cases of HIV infection increased by 11% among MSM between the years 2000 and 2003. During the same time period, newly diagnosed cases decreased by 2% among females and decreased by 4% among other males (i.e., non-MSM).

It is important to exercise caution when interpreting the apparent recent increase in reported cases of HIV infection. Data from the Wisconsin HIV Counseling Testing and Referral Program shows that between 2001 and 2003, the number of MSM tested increased by 27% and the number of MSM that tested HIV positive increased by 31%. Among females and non-MSM males the number that tested positive declined by 16%. Thus, it is possible that some part of the increase in reported cases may be attributed to an increase in HIV testing among persons in high-risk groups.

Understanding HIV infection incidence trends (i.e., new infections) is crucial to understanding the epidemic. Unfortunately, the current HIV testing technology routinely used to diagnose HIV infection cannot distinguish between recent and longer-duration infections. Thus, trends in HIV incidence cannot be directly ascertained from HIV surveillance data.

Other sources, however, clearly demonstrate a potential for increased incidence of HIV infection among MSM. Research from other states suggests that some MSM may now be less concerned about becoming infected than in the past and may be more inclined to engage in high-risk behaviors. This may be particularly true for young MSM. In some areas, drug use, especially use of methamphetamine, may play a role in a resurgence of high-risk sexual behavior.

Another concern nationally has been increasing syphilis rates. Syphilis is a cause for concern because it facilitates the transmission of HIV infection, and because increased syphilis transmission may be a marker for increases in high-risk sexual behavior. In 2003, the number of primary and secondary syphilis cases in the United States increased for the third consecutive year. The CDC has reported that nationally 60% of syphilis cases in 2003 were among MSM. In Wisconsin the syphilis rate is low, however, there was an increase in early syphilis cases among males in 2002.

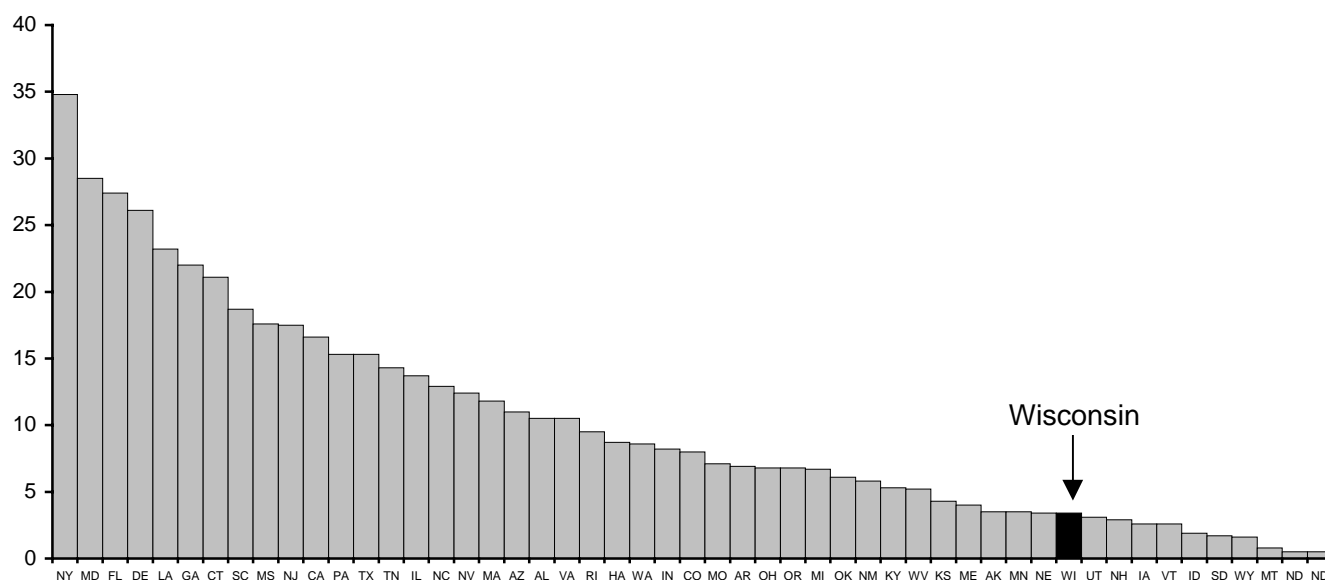
Introduction

This report presents an analysis of Wisconsin HIV case surveillance data collected through the end of 2004. The report focuses on two main concepts. The first is an analysis of trends over time in reported cases of HIV infection. The second focus is a profile of cases reported between 2000 and 2004. An understanding of temporal trends in HIV infection and how HIV has been distributed within the population are important for targeting future HIV prevention and care resources to populations at greatest risk of HIV infection.

In the year 2004, 417 new cases of HIV infection¹ were reported in Wisconsin. This brought the cumulative number of cases of HIV infection reported in Wisconsin to 8,743. Among all reported cases, 5,690 met the Centers for Disease Control and Prevention (CDC) criteria for AIDS; 3,053 have HIV infection but did not meet the AIDS case definition at the end of 2004.

Wisconsin has historically had a low rate of HIV/AIDS morbidity compared to other states. During the year 2003 (the latest year the national data is available), Wisconsin had the tenth lowest AIDS case² rate in the United States (figure 1). The highest rate, in the State of New York; was ten-fold greater than the rate in Wisconsin.

Figure 1. Annual AIDS rates per 100,000 population, by State, cases reported during 2003, United States



Trend in reported cases

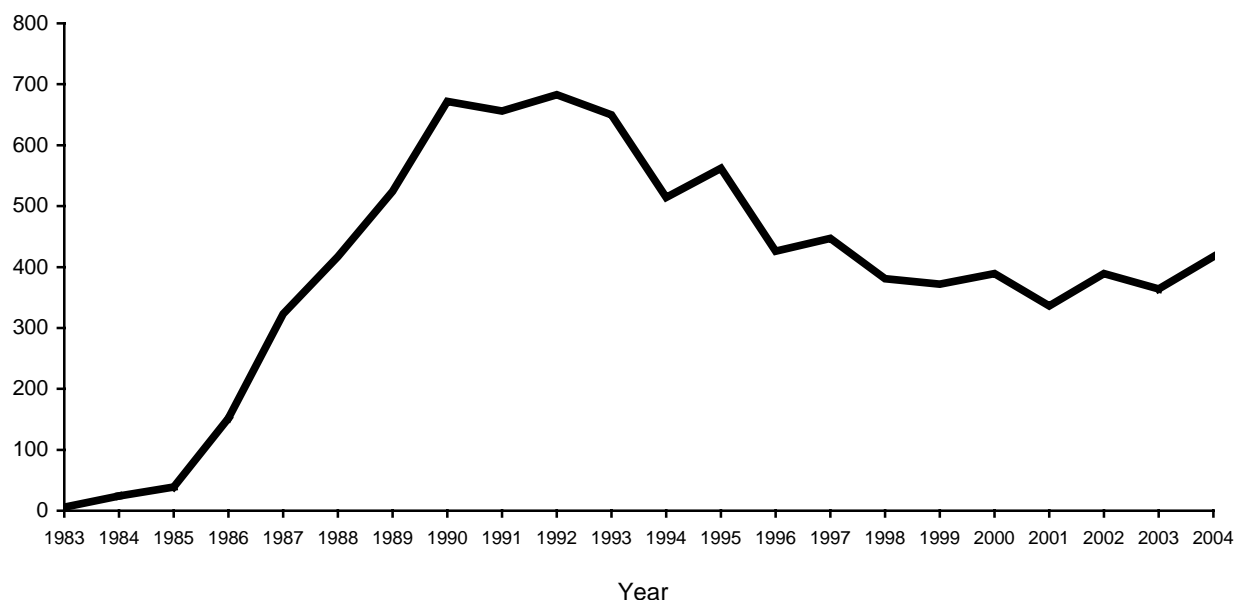
In Wisconsin, the first cases of HIV infection were reported in 1983. Throughout the 1980's, the number of reported cases of HIV infection increased each year (figure 2). The decade of the 1990's marked a transition in the epidemic. During this period, the annual number of reported cases reached a peak between 1990 and 1993 (average: 665 cases) and thereafter began to decline. In 2001, 336 new cases of HIV infection were reported – the lowest number of cases since 1987.

¹ In this report, "HIV infection" refers to all persons with laboratory confirmed HIV infection. This includes both AIDS and non-AIDS cases.

² To compare HIV-related morbidity between states, it is necessary to use AIDS cases because not all states require reporting of non-AIDS HIV infection.

Between 2002 and 2004, newly reported cases increased in two of three years. The 417 new cases of HIV infection reported in 2004 were the highest number of reported cases in Wisconsin since 1997 and represented an increase of 24% compared to 2001 (table 1). All of the increase between 2001 and 2004 can be attributed to increases among males. During this time period, the number of cases of HIV infection reported among males in Wisconsin increased by 34% but decreased 8% for females.

Figure 2. Number of persons reported with HIV infection, by year of report 1983-2004, Wisconsin



For males, the increase in reported cases that was observed between 2001 and 2004 is attributed to increases among men who have sex with men (MSM) (table 1). Reported cases among MSM³ increased by an estimated 48%. The estimated number of cases was unchanged for male injection drug users (IDU) who did not report a history of male-male sexual contact and increased by a single case for females reporting injection drug use. The estimated number of cases decreased for both males and females reporting high-risk heterosexual contact.

Between 2001 and 2004, the number of newly reported cases of HIV infection increased for all race/ethnic groups, but the largest increase was among whites (table 1). Similar percentage increases were noted for persons diagnosed between 15 and 24 years of age and 25 years of age and older. The number of reported cases increased for persons residing in all metropolitan categories⁴, but the increase was greatest among residents of non-metropolitan counties. For residents of non-metropolitan counties the number of reported cases of HIV infection nearly doubled.

³ Some cases of HIV infection are initially reported without a risk-exposure due to lack of acknowledgment of risk by individuals, incomplete reporting by clinicians, or reporting restrictions. In this report, cases with unknown risk have been statistically allocated to risk groups. This adjustment assumes that within a given year the sex-specific risk-distribution of cases without identified risk is the same as the sex-specific risk-distribution of cases with known risk. As a consequence of this adjustment the numbers shown for individual risk groups are estimates.

⁴ In this report, counties are classified into four metropolitan categories. The Milwaukee MSA includes Milwaukee, Ozaukee, Washington and Waukesha counties. The Dane County MSA includes Dane County. Other metropolitan counties are Kenosha, Racine, Rock, Sheboygan, Brown, Outagamie, Winnebago, Calumet, La Crosse, Marathon, Eau Claire, Chippewa, St. Croix, and Douglas. All other counties are classified as non-metropolitan.

Deaths among persons reported with HIV infection in Wisconsin have also declined from the historic peak (figure 3). Ninety-five deaths among persons reported with HIV infection in Wisconsin are known to have occurred in 2003, a 75% decline compared to the 373 deaths the peak year 1993⁵. As a result of declining deaths, the number of persons reported with HIV that are presumed alive has continually increased (figure 4). Over the past five years, the annual increase has averaged 4%. At the end of 2004, an all-time high of 5,367 persons reported with HIV infection in Wisconsin were presumed to be alive; 3,376 persons reported with HIV infection are known to have died.

Table 1. Trend in reported cases of HIV infection 2001-2004, Wisconsin

	Year of Report				Change*	
	2001	2002	2003	2004	Numeric	Percent
Total	336	389	364	417	81	24%
Sex						
Males	258	293	285	345	87	34%
Risk-exposure estimates**						
Men who have sex with men (MSM)	195	248	233	289	94	48%
MSM not IDU	173	217	200	255	82	47%
MSM&IDU	22	31	33	34	12	55%
Injection drug users (IDU) - not MSM	38	25	25	38	0	0%
High-risk heterosexual contact	21	17	23	15	-6	-29%
Other	4	3	4	3	-1	-
Females	78	96	79	72	-6	-8%
Risk-exposure estimates**						
Injection drug users (IDU)	14	19	18	15	1	7%
High-risk heterosexual contact	57	71	57	55	-2	-4%
Other	7	6	4	2	-5	-
Race/ethnicity						
White	146	195	171	199	53	36%
African American	139	144	131	148	9	6%
Hispanic	47	47	51	52	5	11%
American Indian	2	1	4	4	2	-
Asian/Pacific Islander	2	2	3	5	3	-
Multi-racial	0	0	3	5	5	-
Unknown	0	0	1	4	4	-
Age at diagnosis						
<15 years	7	6	4	4	-3	-
15-24 years	53	61	51	64	11	21%
25 years or older	276	322	309	349	73	26%
Metropolitan categories						
Milwaukee MSA	175	209	169	200	25	14%
Dane County MSA	55	56	48	64	9	16%
Other Metropolitan Counties	71	75	82	84	13	18%
Non-Metropolitan Counties	31	42	54	61	30	97%
Corrections	4	7	11	8	4	-

*Change between 2001 and 2004, percent change is not calculated for categories with less than 10 cases reported in 2001 or 2004.

**Risk-exposure case numbers in this table have been adjusted to allocate cases initially reported without an identified risk factor. This allocation assumes cases without identified risk have the same risk-distribution as cases with known risk.

⁵ Due to delays in reporting of deaths, death data is provisional and an accurate estimate of total deaths in 2004 is not yet available.

Figure 3. Number of deaths among persons reported with HIV infection, by year of death 1983-2003, Wisconsin

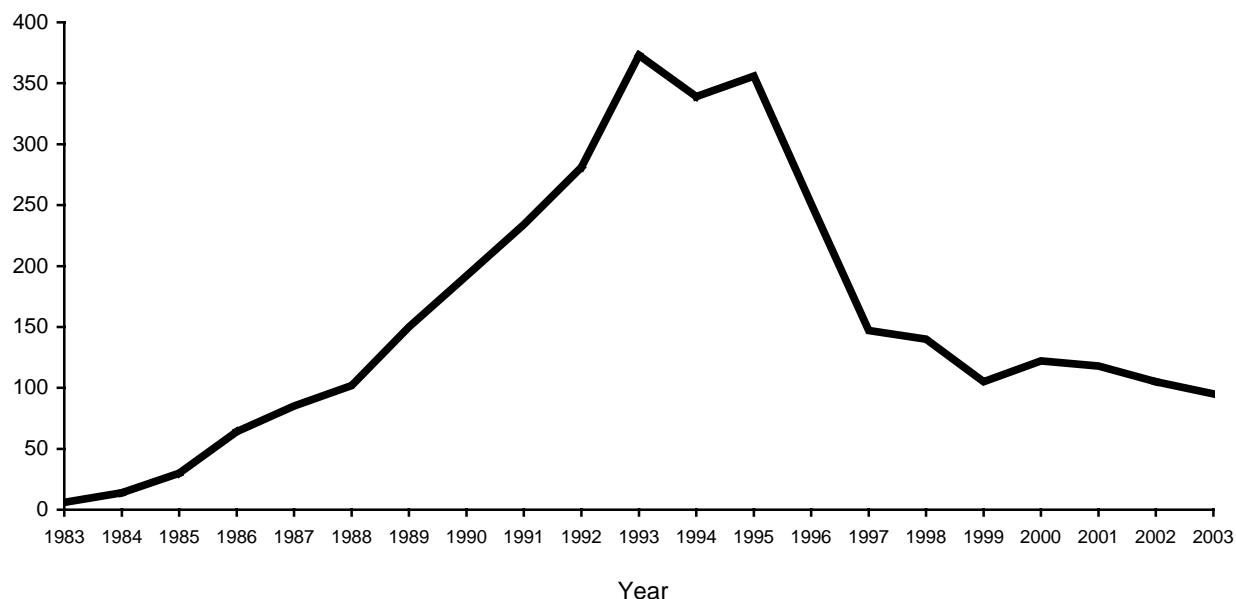
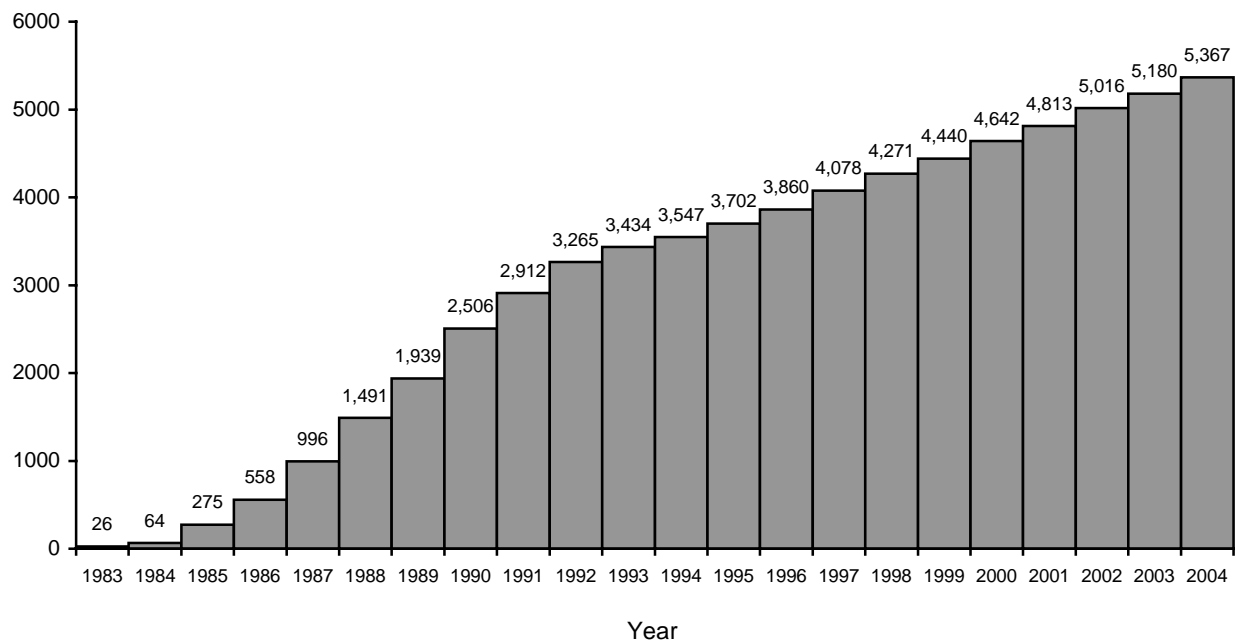


Figure 4. Number of persons reported with HIV infection and presumed alive at years end, Wisconsin, 1983-2004



Profile of cases reported 2000-2004

This section presents a profile of cases reported between 2000 and 2004 in Wisconsin. During this period, 1,895 new cases of HIV infection were reported in Wisconsin. Table 2 shows an overall breakdown of these cases. This profile focuses on risk-exposure, age at time of diagnosis, sex, race/ethnicity, and metropolitan category as important factors in understanding the epidemiology of HIV infection in Wisconsin.

Table 2. Reported cases of HIV infection, 2000-2004, Wisconsin

	Cases	Percent	Average Rate*
Total	1895	100%	7.1
Sex			
Male	1473	78%	11.1
Female	422	22%	3.1
Race/ethnicity			
White	880	46%	3.8
African American	730	39%	48.6
Hispanic	240	13%	24.9
American Indian	16	1%	7.3
Asian/Pacific Islander	16	1%	3.6
Multi-racial	8	0%	3.1
Unknown	5	0%	-
Age at diagnosis			
<15 years	25	1%	0.4
15-24 years	277	15%	7.2
25-44 years	1288	68%	16.3
45 years or older	305	16%	3.2
Metropolitan categories			
Milwaukee MSA	959	51%	12.8
Dane County MSA	270	14%	12.7
Other Metropolitan Counties	404	21%	4.8
Non-Metropolitan Counties	223	12%	2.5
Corrections	39	2%	-
Risk-exposure estimates**			
Men who have sex with men (MSM)	1041	55%	-
Men who have sex with men/injection drug user (MSM&IDU)	131	7%	-
Injection drug users (IDU)	259	14%	-
High-risk heterosexual contact	421	22%	-
Other	42	2%	-

* Average annual number of reported cases of HIV per 100,000 population based on 2000 U.S. Census data. Denominator data not available for risk-exposure groups.

**Risk-exposure case numbers in this table have been adjusted to allocate cases initially reported without an identified risk factor. This allocation assumes cases without identified risk have the same risk-distribution as cases with known risk.

Risk-exposure groups

Throughout the epidemic, most of cases of HIV infection reported in Wisconsin have been among MSM, but the percentage of reported cases attributed to MSM has declined over time (figure 5). Among persons reported with HIV infection in the 1980's, an estimated 66% were MSM; this decreased to 57% between 1990 and 1999, and was 55% for cases reported between 2000 and 2004.

As the percentage of cases reported among MSM declined, the estimated percentage for persons reporting high-risk heterosexual contact increased. In the 1980s, persons reporting high-risk heterosexual contact constituted an estimated 5% of reported cases; this increased to an estimated 22% between 2000 and 2004 (figure 5). The estimated percentages of HIV infection cases reported among MSM&IDU and IDU have been relatively consistent throughout the epidemic.

The demographic profile for persons reported with HIV infection varies between risk-exposure groups (table 3). For IDU, the majority of cases were male. For high-risk heterosexual contact cases, the majority of cases were female. By definition, the MSM and MSM&IDU categories are confined to males.

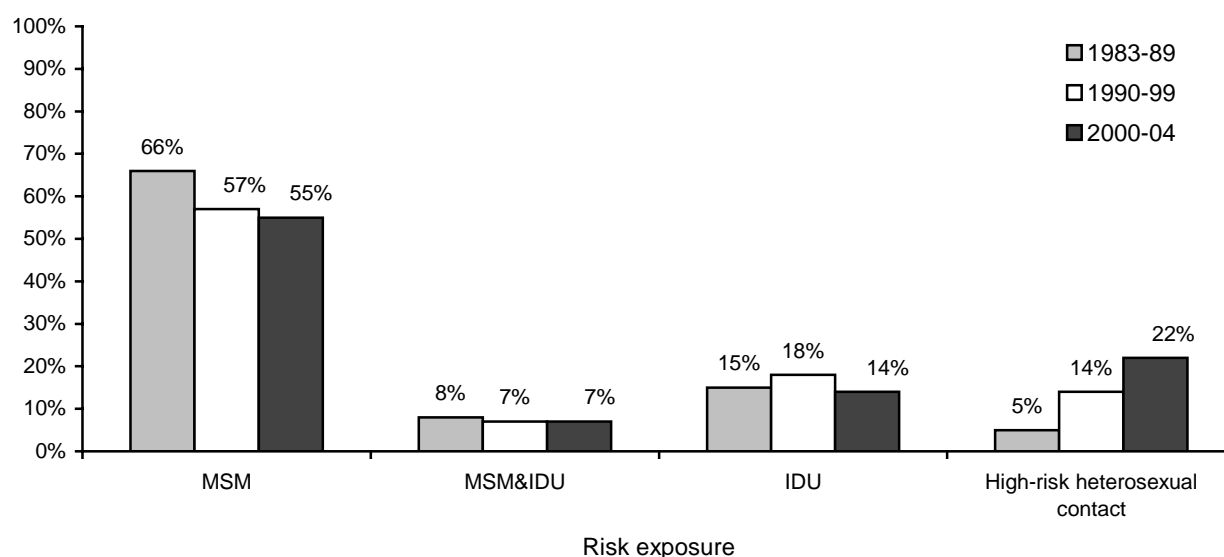
For MSM and MSM&IDU cases reported between 2000 and 2004, the majority of cases were among whites. For IDU and persons reporting high-risk heterosexual contact, the majority of cases were reported among racial and ethnic minorities. For all four major risk-exposure groups, the percentage of reported cases among African Americans and Hispanics was disproportionately high compared to their percentage of the overall Wisconsin population (table 3). The greatest disparities were among African American and Hispanic IDU and African American and Hispanic persons in the high-risk heterosexual contact category.

For all major risk-exposure groups, the highest percentage of cases were reported from the Milwaukee MSA. For all risk-exposure groups, the percentage of cases in the Milwaukee MSA and the Dane County MSA was disproportionately high compared to the percentage of the Wisconsin population in these MSAs.

Early in the epidemic, HIV transmission occurred among blood transfusion recipients and persons with hemophilia who received contaminated blood products. Since screening of the blood supply began in 1985, HIV transmission among transfusion recipients and persons with hemophilia has been very rare. Between 2000 and 2004, these groups accounted for less than 1% of all reported cases of HIV infection cases in Wisconsin. For all cases associated with hemophilia and blood transfusion reported during this period, exposure to contaminated blood products prior to 1985.

In Wisconsin, a total of 79 persons reported with HIV infection have been classified in the "mother at risk" risk-exposure category; this represents less than 1% of all reported cases of HIV infection. A case is classified in this category if exposure to HIV occurred during the perinatal period (i.e., a child born to an HIV infected mother). In Wisconsin, HIV infection among children in this category has been closely linked to injection drug use; 57% of children with perinatally transmitted HIV infection were born to mothers who either had a history of injection drug use or who were a sex partner of an injection drug user. Nationwide, the number of children born with HIV infection has declined as a result of treatments that reduce the likelihood of perinatal HIV transmission. Case numbers were highest among children born in the late 1980s and early 1990s and have since declined. Eleven cases have been reported among children born between 2000 and 2004. No children born in 2004 have been reported with HIV infection. Because of reporting delays, these data should be considered provisional.

Figure 5. Estimated percentage* of reported cases by risk exposure for HIV infection cases reported during three time periods, Wisconsin



* Percentages calculated among cases with known risk.

Table 3. Estimated percentage* of reported cases of HIV infection among persons 15 years of age and older, 2000-2004, by risk-exposure category, Wisconsin

	MSM	MSM&IDU	IDU	High-risk heterosexual contact	Wisconsin population
Sex					
Males	100%	100%	70%	29%	49%
Females	-	-	30%	71%	51%
Race/ethnicity					
White	63%	67%	31%	26%	87%
African American	27%	21%	45%	54%	6%
Hispanic	9%	9%	20%	17%	4%
American Indian	0%	2%	3%	1%	1%
Asian/Pacific Islander	0%	0%	0%	1%	2%
Multi-racial	0%	1%	0%	1%	1%
Age at diagnosis					
Median (years)	34	30	38	29	-
Range (years)	16-77	16-54	17-66	15-70	-
Metropolitan categories					
Milwaukee MSA	50%	37%	51%	52%	28%
Dane County MSA	15%	16%	13%	15%	8%
Other Metropolitan Counties	22%	27%	18%	20%	31%
Non-Metropolitan Counties	11%	18%	13%	11%	33%
Corrections	1%	2%	4%	2%	-

* Percentages are calculated among cases with known risk.

Age at time of diagnosis

The age-distribution of reported cases has been relatively consistent throughout the epidemic (figure 6). For cases of HIV infection reported between 2000 and 2004, the median age at diagnosis of HIV infection was 34 years (range 0-78 years of age). Most (68%) persons reported with HIV infection were between the ages of 25 and 44 when they were first diagnosed with HIV infection. Fifteen percent were between 15 and 24 years of age and 16% were 45 years of age and older (table 2).

It is important to note that the age at diagnosis of HIV infection is not usually the age when HIV infection was acquired. Because HIV infected persons often experience a long period during which they appear and feel healthy they may remain undiagnosed for years. The CDC estimates that at least one-half of all persons with HIV infection in the U.S. acquired the disease before they were 25 years old.

There are some notable differences in the demographic profile of persons who were 15-24 years of age at time of diagnosis of HIV infection. Among persons reported with HIV infection who were 15-24 years when they were diagnosed with HIV infection, 34% were female and 72% were race/ethnic minorities (table 4). This compares to 19%-20% female and 47%-51% minority for the older age groups.

The risk-exposure profile also differed by age group (figure 7). Compared to the older age groups, the percentage of persons that reported high-risk heterosexual contact was higher for cases 15-24 years of age. The percentage of cases reporting injection drug use increased with increasing age. Among person 15-24 years of age, 8% reported injection drug use; this percentage was 13% for those 25-44 years of age and 21% for those 45 years of age and older.

Figure 6. Cases of HIV infection reported during three time periods, by age group, Wisconsin

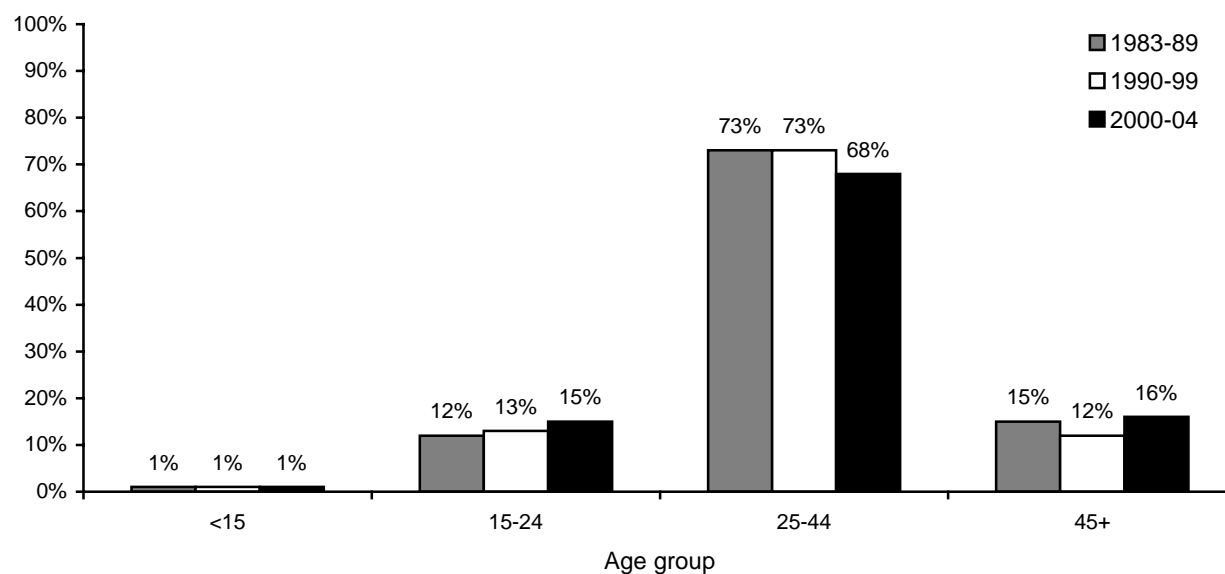
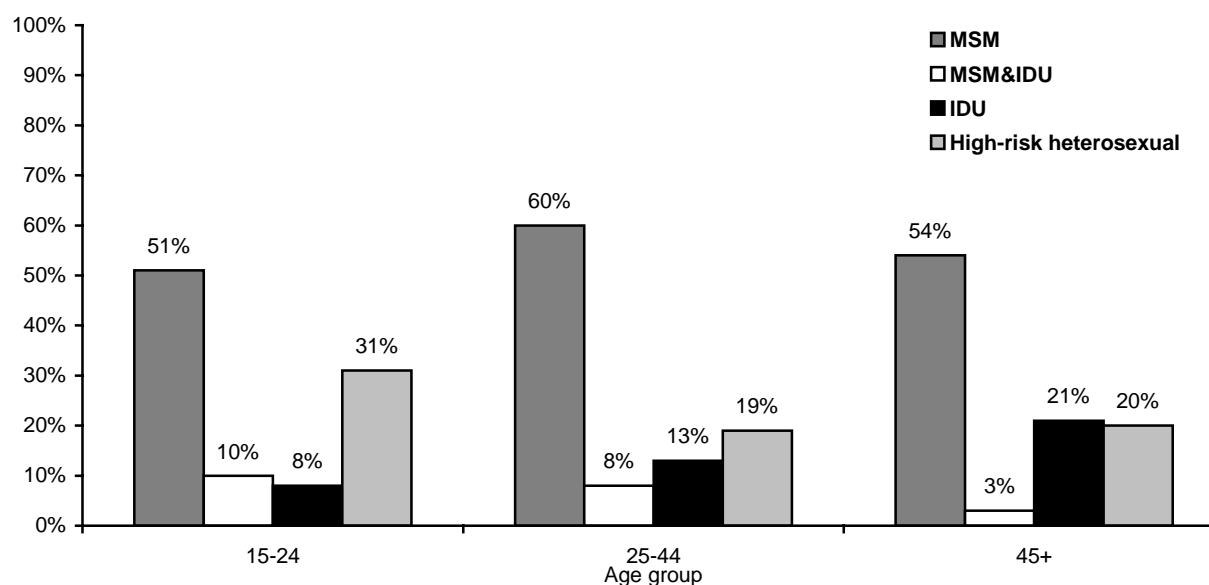


Table 4. Demographic characteristics of persons reported with HIV infection by age group, 2000-2004, Wisconsin

	15-24 years			25-44 years			45 years or older		
	Cases	Percent	Average Rate*	Cases	Percent	Average Rate*	Cases	Percent	Average Rate*
Total	277	100%	7.2	1288	100%	16.3	305	100%	3.2
Sex									
Males	182	66%	9.3	1037	81%	26.0	243	80%	5.5
Females	95	34%	5.1	251	19%	6.4	62	20%	1.2
Race/ethnicity									
White	78	28%	2.5	630	49%	9.1	163	53%	1.8
African American	144	52%	54.7	465	36%	102.1	109	36%	34.6
Hispanic	44	16%	21.0	165	13%	53.7	28	9%	22.0
American Indian	2	1%	4.8	12	1%	16.0	2	1%	3.9
Asian/Pacific Islander	4	1%	4.3	11	1%	8.1	1	0%	1.4
Multi-racial	2	1%	3.2	4	0%	5.4	1	0%	2.2
Unknown	3	1%	-	1	0%	-	1	0%	-
Metropolitan categories									
Milwaukee MSA	148	53%	14.5	664	52%	29.4	137	45%	5.3
Dane County MSA	30	11%	7.8	197	15%	28.4	38	12%	5.8
Other Metropolitan Counties	66	24%	5.4	253	20%	10.0	76	25%	2.7
Non-Metropolitan Counties	26	9%	2.2	146	11%	6.0	50	16%	1.5
Corrections	7	3%	-	28	2%	-	4	1%	-

* Average annual number of reported cases of HIV per 100,000 population based on 2000 U.S. Census data.

Figure 7. Estimated percentage* of reported HIV cases by age group and risk-exposure, 2000-2004, Wisconsin



* Percentages calculated among cases with known risk.

Sex

Throughout the epidemic and continuing in recent years, males have been a substantial majority of persons reported with HIV in Wisconsin. Between 2000 and 2004, 78% of person reported with HIV infection were male (table 2). The average reported rate of HIV infection was 3.6-fold greater for males compared to females.

While males continue to be the majority of persons reported with HIV infection, the percentage among females has progressively increased over time (figure 8). During the 1980's, 10% of persons reported with HIV infection were females; for persons reported between 1990 and 1999, 16% were females. This proportion has increased to 22% among persons reported with HIV infection between 2000 and 2004.

While the percentage of reported HIV infection attributed to females has increased over time, the actual number of cases among females has not increased (figure 9). Instead, the increasing percentage among females has been a consequence a decrease in the number of cases among males. As previously mentioned, reported cases increased among males between 2002 and 2004, but declined among females. In 2004, 17% of persons reported with HIV infection were females.

There were important differences in the demographic characteristics of males and females reported with HIV infection between 2000 and 2004. Among males, a majority (52%) were white (table 5), whereas for females 73% of persons reported with HIV infection were among members of racial/ethnic minority groups. Twenty-three percent of females reported during this period were between 15 and 24 years of age at the time they were first diagnosed compared to 12% of males.

A substantial majority (71%) of males reported with HIV infection between 2000 and 2004 were MSM, and additional 9% were MSM&IDU (figure 10). Among females, 77% of cases with known risk reported high-risk heterosexual contact.

Figure 8. Cases of HIV infection reported during three time periods, by sex, Wisconsin

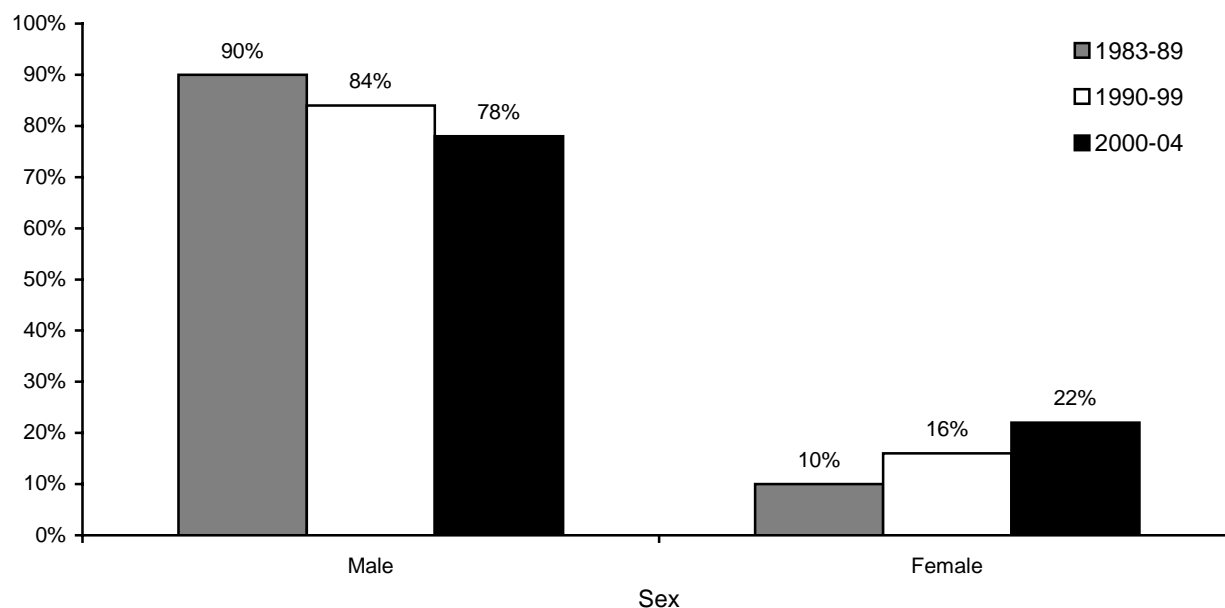


Figure 9. HIV infections by sex and year of report, Wisconsin, cases reported through 2004

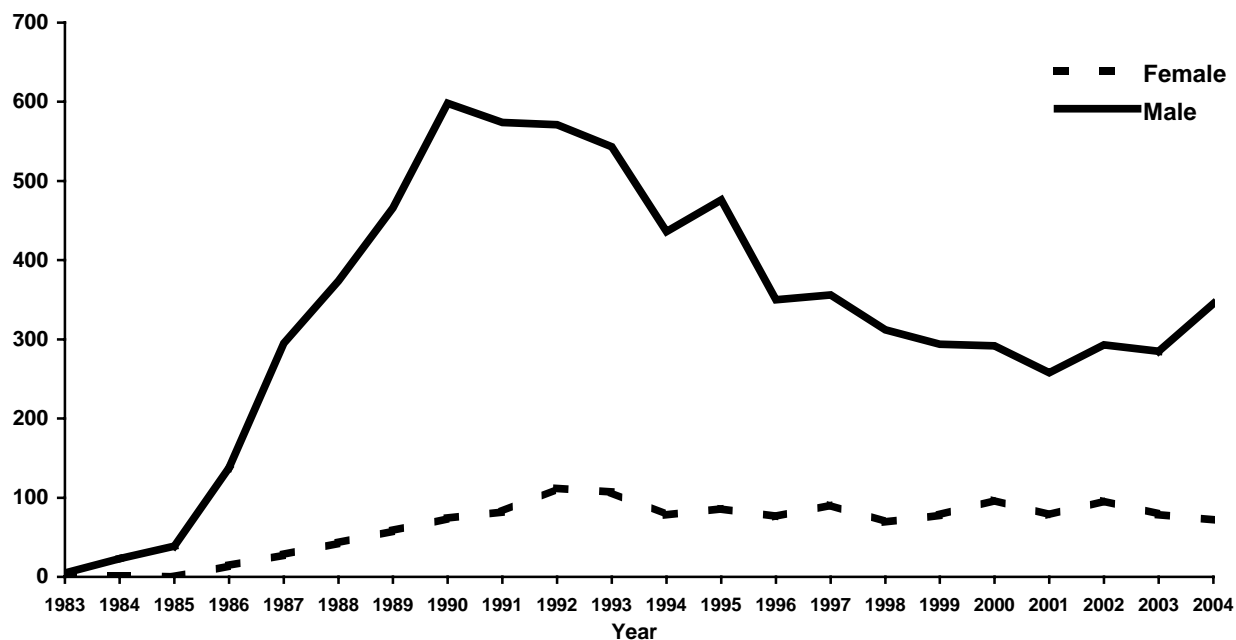
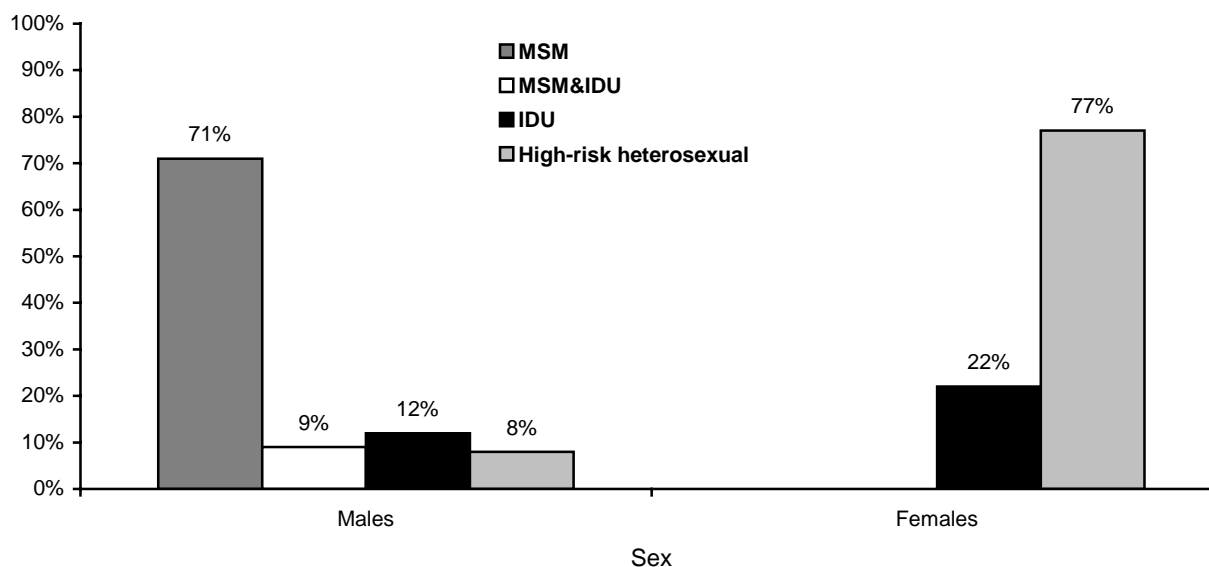


Table 5. Demographic characteristics of persons reported with HIV infection by sex, 2000-2004, Wisconsin

	Males			Females		
	Cases	Percent	Average Rate*	Cases	Percent	Average Rate*
Total	1473	100%	11.1	422	100%	3.1
Race/ethnicity						
White	768	52%	6.5	112	27%	0.9
African American	485	33%	65.9	245	58%	31.2
Hispanic	185	13%	35.4	55	13%	12.4
American Indian	13	1%	11.1	3	1%	2.5
Asian/Pacific Islander	12	1%	5.3	4	1%	1.8
Multi-racial	6	0%	3.6	2	0%	1.2
Unknown	4	0%	-	1	0%	-
Age at diagnosis						
<15 years	11	1%	0.4	14	3%	0.5
15-24 years	182	12%	9.3	95	23%	5.1
25-44 years	1037	70%	26.0	251	59%	6.4
45 years or older	243	16%	5.5	62	15%	1.2
Metropolitan categories						
Milwaukee MSA	723	49%	19.9	236	56%	6.1
Dane County MSA	207	14%	19.6	63	15%	5.8
Other Metropolitan Counties	322	22%	7.8	82	19%	1.9
Non-Metropolitan Counties	185	13%	4.2	38	9%	0.9
Corrections	36	2%	-	3	1%	-

* Average annual number of reported cases of HIV per 100,000 population based on 2000 U.S. Census data.

Figure 10. Estimated percentage* of reported HIV cases by sex and risk-exposure, 2000-2004, Wisconsin



* Percentages calculated among cases with known risk.

Race/ethnicity

Throughout the epidemic, the largest number of cases of HIV infection reported in Wisconsin has been among whites. However, over time the percentage of cases reported among racial/ethnic minorities, particularly non-Hispanic African Americans and Hispanics, has increased (figure 11). For all persons reported with HIV infection between 2000 and 2004 in Wisconsin, 54% were members of racial/ethnic minority groups.

While racial/ethnic minorities constitute more than one-half of all persons recently reported with HIV infection in Wisconsin, racial/ethnic minorities comprise only about 12% of the Wisconsin population. This disparity results in higher average annual rates of reported HIV infection for African Americans, Hispanics, and American Indians than for whites (figure 12). Between 2000 and 2004, the average annual rate of reported HIV infection was 13-fold greater for African Americans, seven-fold greater for Hispanics, and nearly two-fold greater for American Indians compared to the rate among whites.

For all race/ethnic groups, the majority of persons reported with HIV infection were males. The percentage of cases attributed to females was, however, greater for African Americans and Hispanics than for whites (table 6). As a result, the racial/ethnic disparity in reported cases was more pronounced for females than for males. The average rate (i.e., cases per 100,000 population) of reported cases between 2000 and 2004 for African American and Hispanic females was 35-fold and 14-fold greater respectively compared to white females and in each case exceeded the rate for white males.

The risk-exposure distribution for cases of HIV infection recently reported also varies by race/ethnicity. Among cases with known risk-exposure reported between 2000 and 2004, MSM represented the majority (71%) of cases among whites but less than half of cases among African Americans and Hispanics (figure 13). In contrast, the percentage of cases among IDU and high-risk heterosexuals was higher for African Americans and Hispanics than for whites.

Figure 11. Cases of HIV infection reported during three time periods, by race/ethnicity, Wisconsin

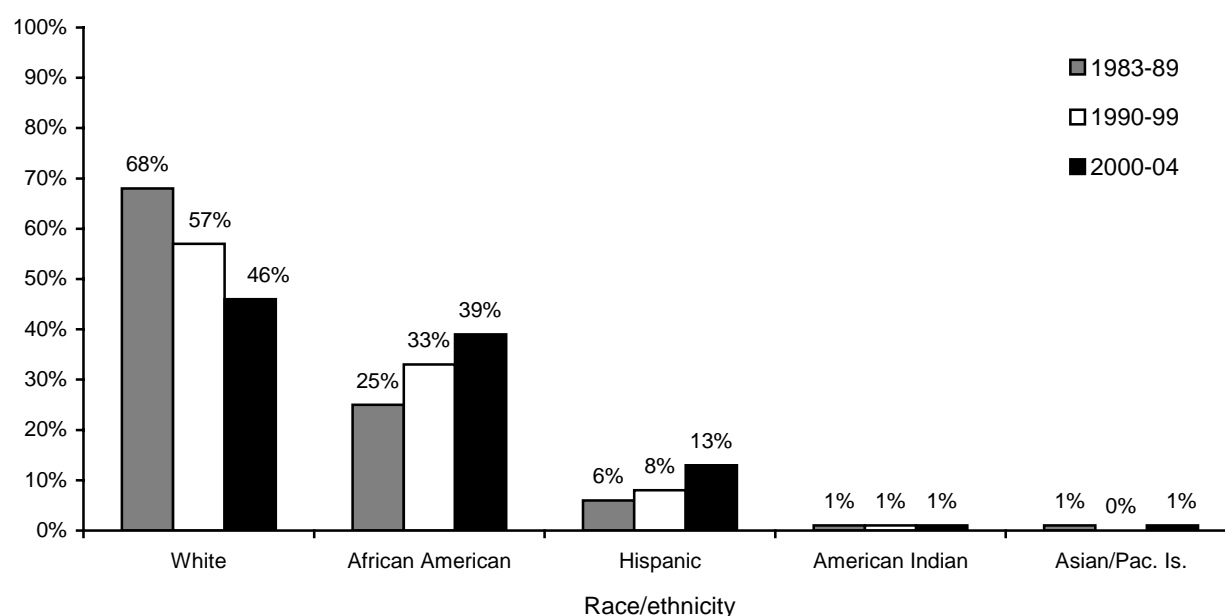


Figure 12. Average annual rate of reported HIV infection per 100,000 population, by race/ethnicity, Wisconsin, cases reported 2000-2004

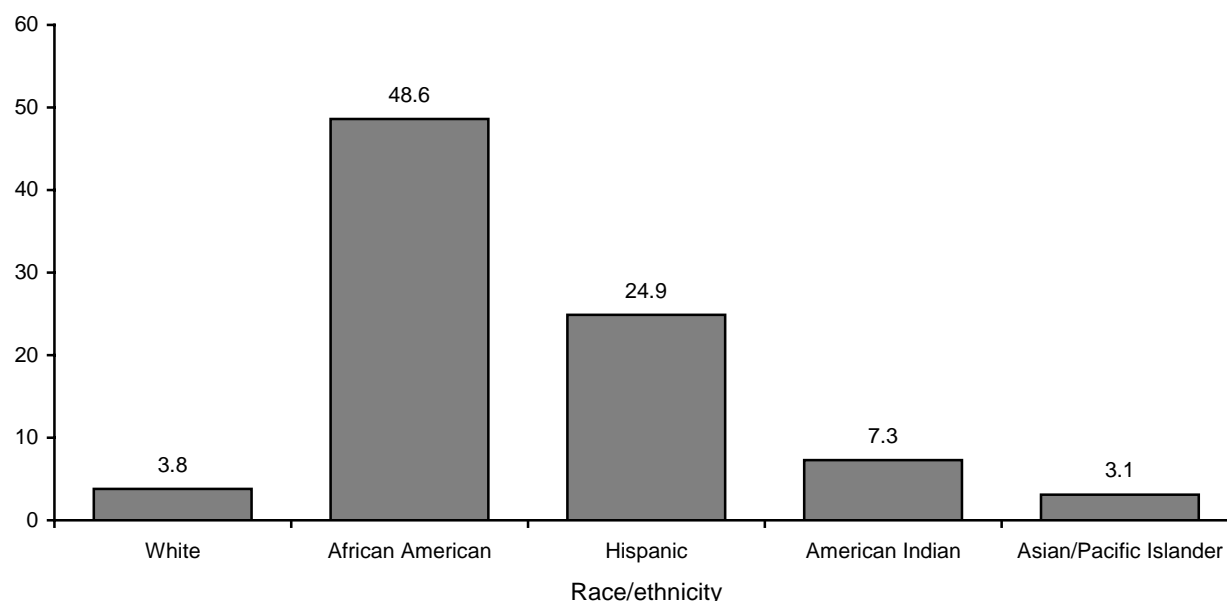
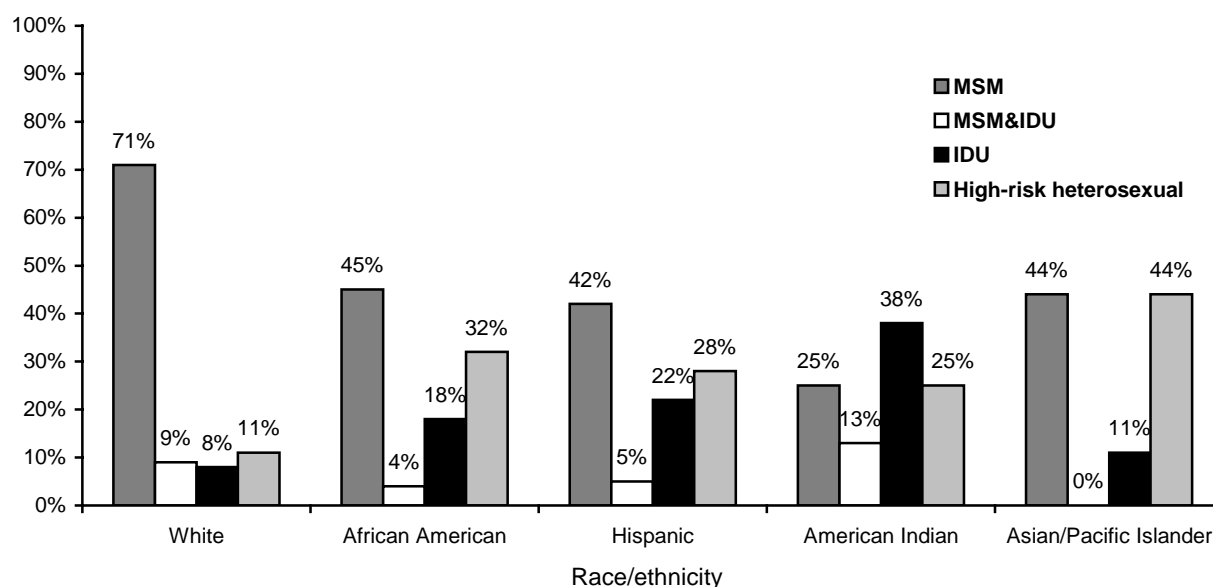


Table 6. Demographic characteristics of persons reported with HIV infection by race/ethnicity, 2000-2004, Wisconsin

	White			African American			Hispanic		
	Cases	Percent	Average Rate*	Cases	Percent	Average Rate*	Cases	Percent	Average Rate*
Total	880	100%	3.8	730	100%	48.6	240	100%	24.9
Sex									
Male	768	87%	6.5	485	66%	65.9	185	77%	35.4
Female	112	13%	0.9	245	34%	31.2	55	23%	12.4
Age at diagnosis									
<15 years	9	1%	0.2	12	2%	2.5	3	1%	0.9
15-24 years	78	9%	2.5	144	20%	54.7	44	18%	21.0
25-44 years	630	72%	9.1	465	64%	102.1	165	69%	53.7
45 years or older	163	19%	1.8	109	15%	34.6	28	12%	22.0
Metropolitan categories									
Milwaukee MSA	304	35%	5.3	505	69%	43.0	137	57%	29.0
Dane County MSA	152	17%	8.0	84	12%	98.4	29	12%	40.3
Other Metropolitan Counties	249	28%	3.2	98	13%	45.2	52	22%	19.0
Non-Metropolitan Counties	163	19%	1.9	22	3%	49.1	17	7%	11.6
Corrections	12	1%	-	21	3%	-	5	2%	-

* Average annual number of reported cases of HIV per 100,000 population based on 2000 U.S. Census data.

Figure 13. Estimated percentage* of reported HIV cases by race/ethnicity and risk-exposure, 2000-2004, Wisconsin



* Percentages calculated among cases with known risk.

Metropolitan Category

In this report, counties are classified into four metropolitan categories. The Milwaukee and Dane County Metropolitan Statistical Areas (MSA) are the two largest urban areas in Wisconsin with populations in 2000 of 1.5 million and 426,000 respectively. The category "other metropolitan counties" represents a group of fourteen counties that are part of a MSA as defined by the U.S. Census Bureau. These counties contain medium size cities and together had a population of 1.7 million in the 2000 Census. The category "non-metropolitan counties" comprise the remaining 53 Wisconsin counties. Non-metropolitan counties are largely rural and had a combined population of 1.8 million in 2000.

Since the beginning of the epidemic, HIV infection has occurred throughout Wisconsin; cases have been reported from all of the 72 counties in Wisconsin. The percentage of reported cases of HIV infection attributed to each metropolitan category has been similar throughout the epidemic (figure 13).

Among cases reported between 2000 and 2004, 51% have been from the Milwaukee MSA. The average rate of reported cases was similar in the Milwaukee MSA and the Dane County MSA, lower rates were observed in the other two metropolitan categories (table 7).

In the Milwaukee MSA, 68% of all cases reported between 2000 and 2004 were among racial/ethnic minorities. The average annual rate for African Americans and Hispanics was higher than for whites in all metropolitan categories. The risk-exposure distribution was similar across all four metropolitan categories (figure 14).

Table 7. Demographic characteristics of persons reported with HIV infection by metropolitan category, 2000-2004, Wisconsin

	Milwaukee MSA			Dane Co. MSA		
	Cases	Percent	Average Rate*	Cases	Percent	Average Rate*
Total	959	100%	12.8	270	100%	12.7
Sex						
Male	723	75%	19.9	207	77%	19.6
Female	236	25%	6.1	63	23%	5.8
Race/ethnicity						
White	304	32%	5.3	152	56%	8.0
African American	505	53%	43.0	84	31%	98.4
Hispanic	137	14%	29.0	29	11%	40.3
American Indian	2	0%	5.0	2	1%	28.5
Asian/Pacific Islander	7	1%	4.4	3	1%	4.0
Multi-racial	4	0%	3.2	0	0%	0.0
Unknown	0	0%		0	0%	
Age at diagnosis						
<15 years	10	1%	0.6	5	2%	1.2
15-24 years	148	15%	14.5	30	11%	7.8
25-44 years	664	69%	29.4	197	73%	28.4
45 years or older	137	14%	5.3	38	14%	5.8

	Other Metropolitan Counties			Non-Metropolitan Counties		
	Cases	Percent	Average Rate*	Cases	Percent	Average Rate*
Total	404	100%	4.8	223	100%	2.5
Sex						
Male	322	80%	7.8	185	83%	4.2
Female	82	20%	1.9	38	17%	0.9
Race/ethnicity						
White	249	62%	3.2	163	73%	1.9
African American	98	24%	45.2	22	10%	49.1
Hispanic	52	13%	19.0	17	8%	11.6
American Indian	1	0%	1.5	10	4%	8.1
Asian/Pacific Islander	2	0%	1.2	4	2%	7.2
Multi-racial	0	0%	0.0	4	2%	5.8
Unknown	2	0%		3	2%	
Age at diagnosis						
<15 years	9	2%	0.5	1	0%	0.1
15-24 years	66	16%	5.4	26	12%	2.2
25-44 years	253	63%	10.0	146	65%	6.0
45 years or older	76	19%	2.7	50	22%	1.5

* Average annual number of reported cases of HIV per 100,000 population based on 2000 U.S. Census data.

Figure 14. Cases of HIV infection reported during three time periods, by metropolitan category, Wisconsin

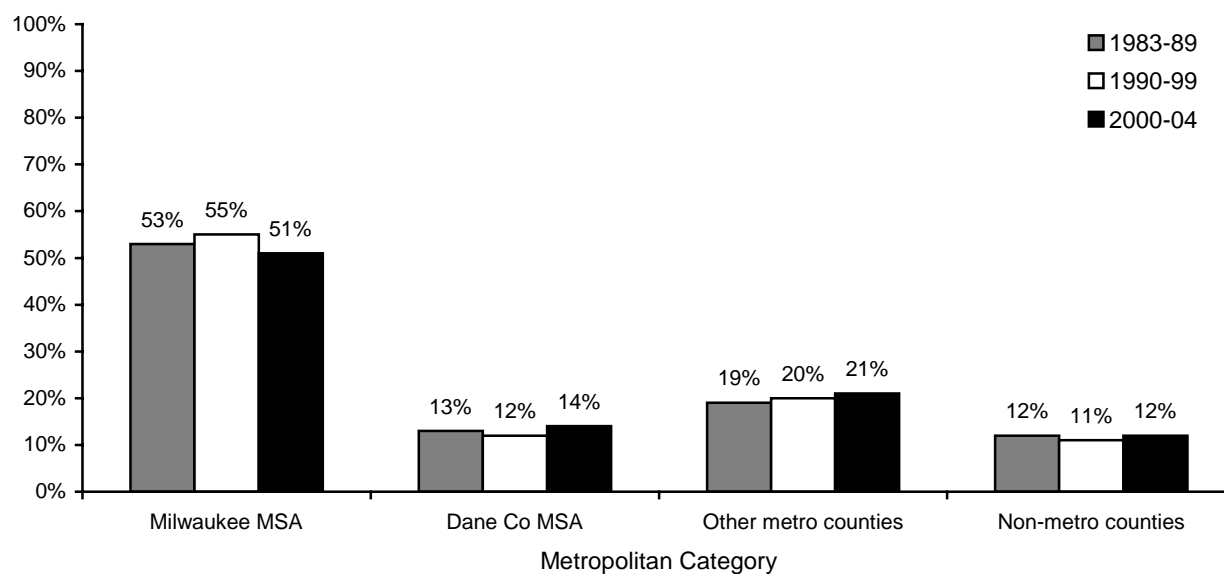
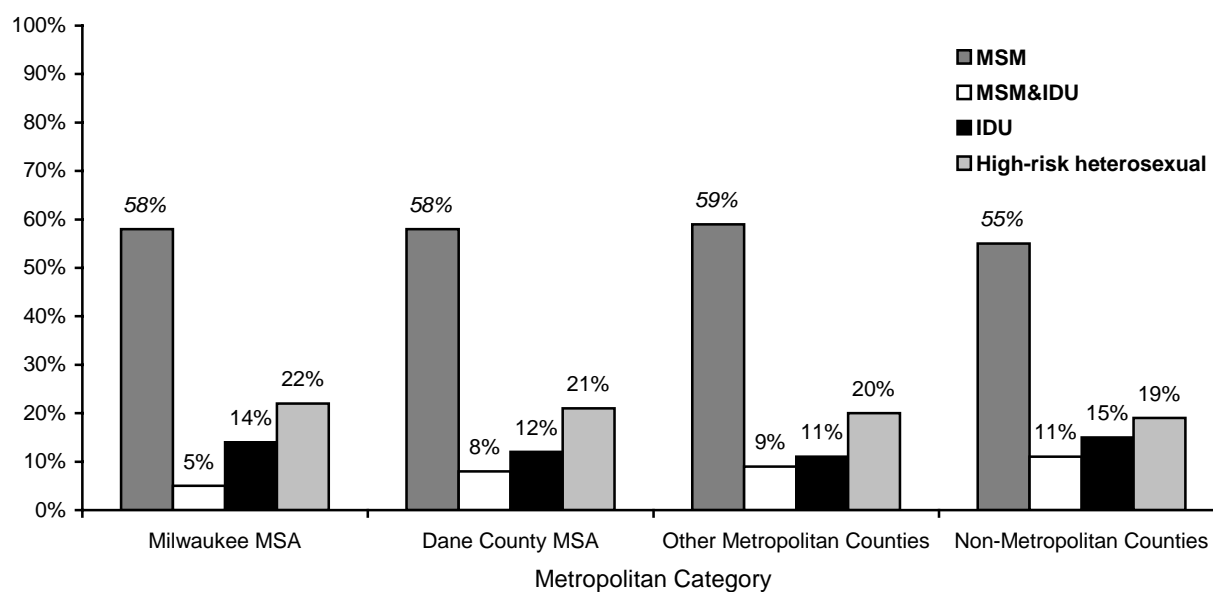


Figure 15. Estimated percentage* of reported HIV cases by metropolitan category and risk-exposure, 2000-2004, Wisconsin



* Percentages calculated among cases with known risk.

Conclusion

The epidemiologic profile described in this analysis reiterates many of the findings from similar analyses in recent years. While an important component of the epidemic is associated with injection drug use, sexual transmission continues to be the dominant mode of HIV transmission in Wisconsin. Sexually transmitted HIV infection occurs both among heterosexual men and women, and among men who have sex with men, but the impact is not equal. Between 2000 and 2004, 2.5 cases of HIV infection were reported among men who have sex with men for every one case attributed to high-risk heterosexual behavior.

The “face” of HIV infection in Wisconsin remains predominately male, with an important minority of cases occurring among females. Persons with HIV infection continue to be diagnosed in their late twenties and early thirties, although most are probably infected in their late teens and twenties. HIV infection has occurred in all populations and all parts of the state. However, as the epidemic evolves, it continues to exert a disproportionate effect on racial and ethnic minority communities in Wisconsin.

While these characteristics are consistent with other profiles from recent years, analysis of the 2004 HIV surveillance data suggests an important new finding. After a decade long downward trend, the number of newly reported cases of HIV infection increased for two of the past three years. In 2004 the number of new cases reached the highest number in seven years.

One possible explanation is that the increase observed in 2004 is a random fluctuation in an otherwise leveling of cases. These data cannot rule out this possibility, only time will tell if this trend continues or if case numbers return to previous levels. However, the 2004 increase does not appear to be randomly distributed. The increase in reported cases between 2001 and 2004 was restricted to men who have sex with men, while reported cases among females and non-MSM males declined.

Furthermore, data reported by the CDC reveal similar trends nationwide. The CDC HIV/AIDS Surveillance Report for the end of year 2003 showed that in 33 areas with name-based HIV infection reporting the number of newly diagnosed cases of HIV infection increased by 11% among MSM between the years 2000 and 2003. During the same time period, newly diagnosed cases decreased by 2% among females and decreased by 4% among other males (i.e., non-MSM).

It is important to exercise caution when interpreting the apparent recent increase in reported cases of HIV infection. For some time, encouraging persons at risk of HIV infection to be tested has been an important element of HIV prevention. It has long been recognized that if this strategy is successful, the number of reported cases would increase, at least for the short-term.

Data from the Wisconsin HIV Counseling Testing and Referral Program (CTRP) shows that between 2001 and 2003, the number of MSM tested increased by 27% and the number of MSM that tested HIV positive increased by 31%. Among females and non-MSM males the total number tested increased by 2%, while the number that tested positive declined by 16%. It is possible, therefore, that in Wisconsin some part of the increase in reported cases may be attributed to an increase in HIV testing among persons in high-risk groups.

Understanding trends in the incidence of HIV infection (i.e., new infections) is crucial to understanding the epidemic. Unfortunately, the current HIV testing technology routinely used to diagnose HIV infection cannot distinguish between recent and longer-duration infections. Thus, trends in HIV incidence cannot be directly ascertained from HIV surveillance data.

Other sources, however, clearly demonstrate a potential for increased incidence of HIV infection among MSM. Research conducted in other states suggest that some MSM may now be less concerned about becoming infected than in the past and thus may be more inclined to engage in high-risk behaviors. This may be particularly true for young MSM. In some areas, drug use especially use of methamphetamine may play a role in a resurgence of high-risk sexual behavior.

Another concern nationally has been increasing syphilis rates. Syphilis facilitates the transmission of HIV infection, and may be a marker for increases in high-risk sexual behavior. In 2003, the number of primary and secondary syphilis cases in the United States increased for the third consecutive year. The CDC has reported that nationally 60% of syphilis cases in 2003 were among MSM. In Wisconsin the syphilis rate is low, however, there was an increase in early syphilis cases among males in 2002.

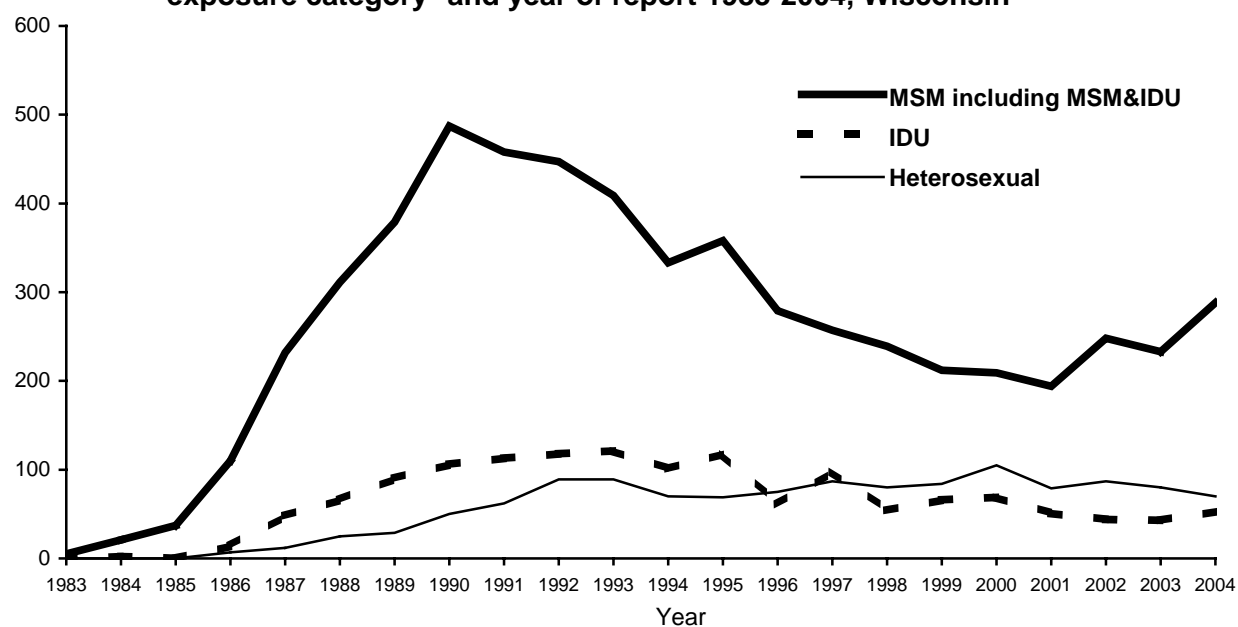
This analysis shows that Wisconsin has begun to see the increase in the number of men who have sex with HIV-infected men that was recognized earlier in other parts of the United States. Part of this increase may be related to an increase in HIV testing of persons in high-risk groups, part to other factors.

Wisconsin's HIV surveillance data cannot clearly explain if an increased incidence of HIV infection among MSM resulted in increasing cases of HIV infection among MSM in Wisconsin. National studies, however, indicate that unprotected sex among MSM has re-emerged as a major public health concern. This suggests that part of the increase in reported cases among MSM may well be related to increased transmission of HIV among MSM in Wisconsin.

Appendix

Additional figures and tables

Figure A1. Number of persons reported with HIV infection, by risk exposure category* and year of report 1983-2004, Wisconsin



* Adjusted for cases initially reported with unknown risk.

Figure A2. Number of children reported with HIV infection whose risk exposure category is "Mother at Risk" by year of birth, Wisconsin, cases reported through 2004

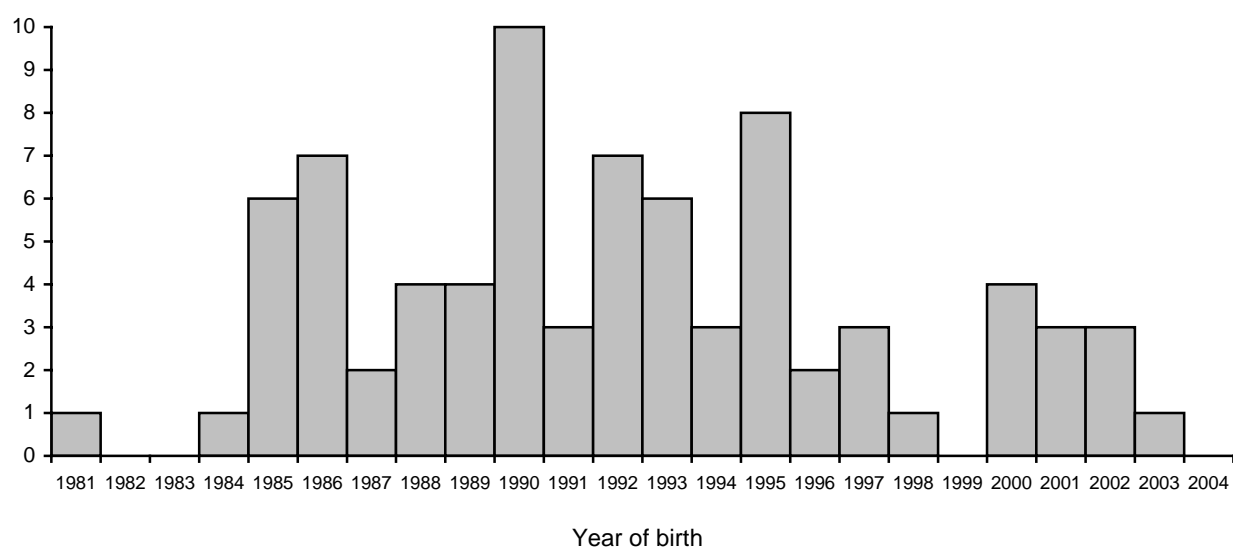


Figure A3. Age at time of first diagnosis of HIV infection, Wisconsin, cases reported through 2004

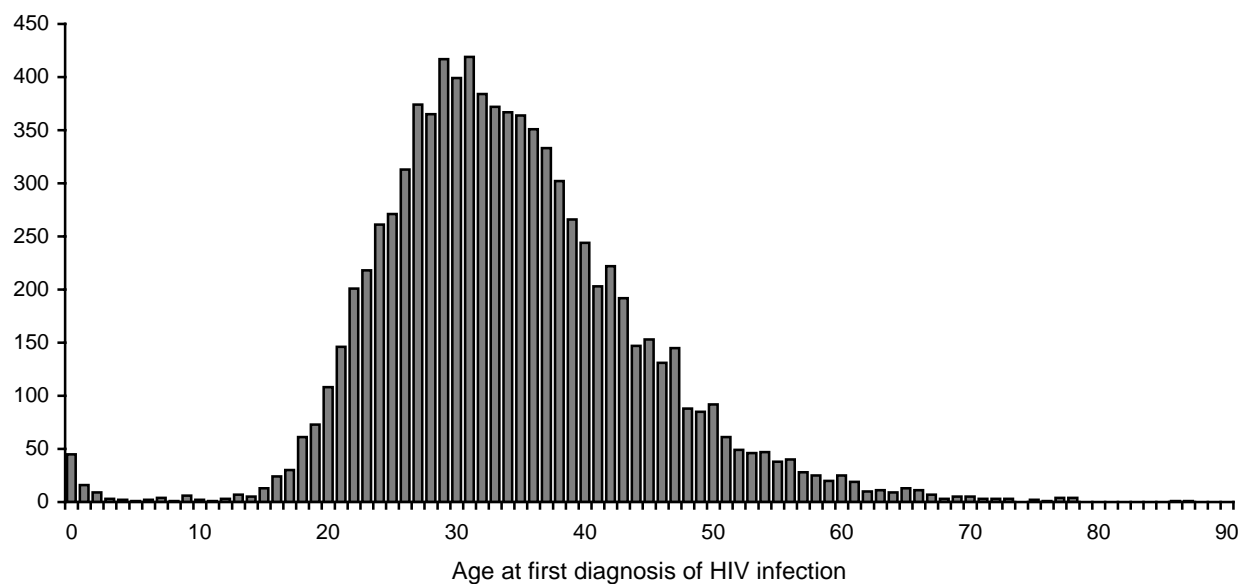


Figure A4. HIV infections by year of report and for youth (15-24 years of age) and adults (more than 24 years of age), Wisconsin, cases reported through 2004

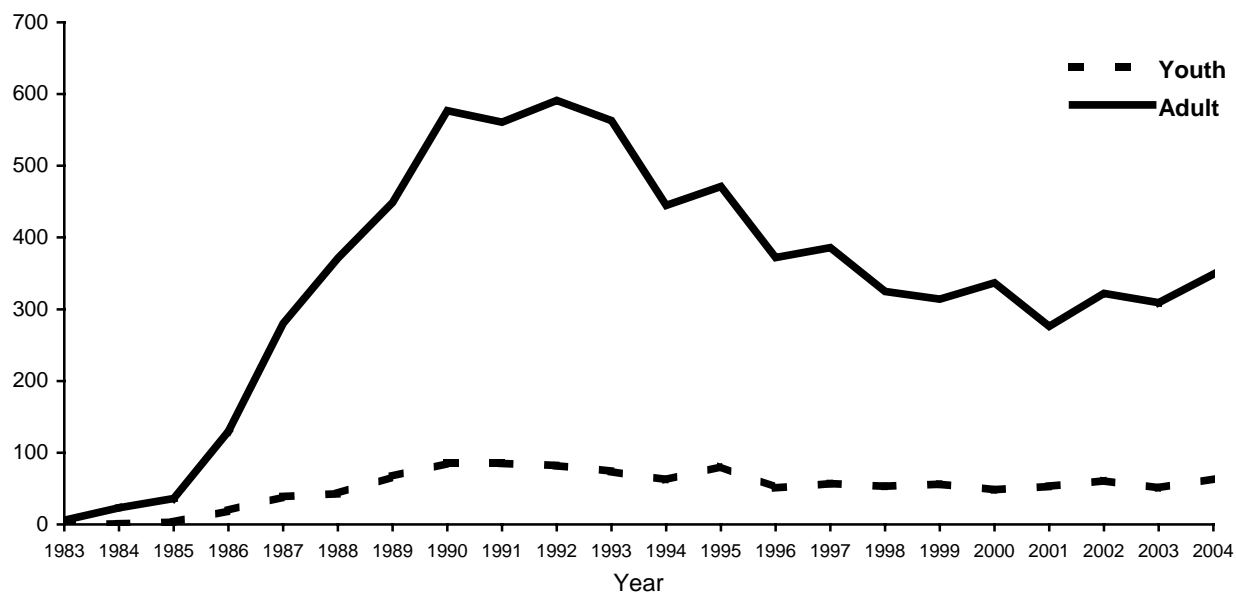


Figure A5. Percentage of cases of HIV infection among racial/ethnic minorities by year of report, Wisconsin, cases reported through 2004

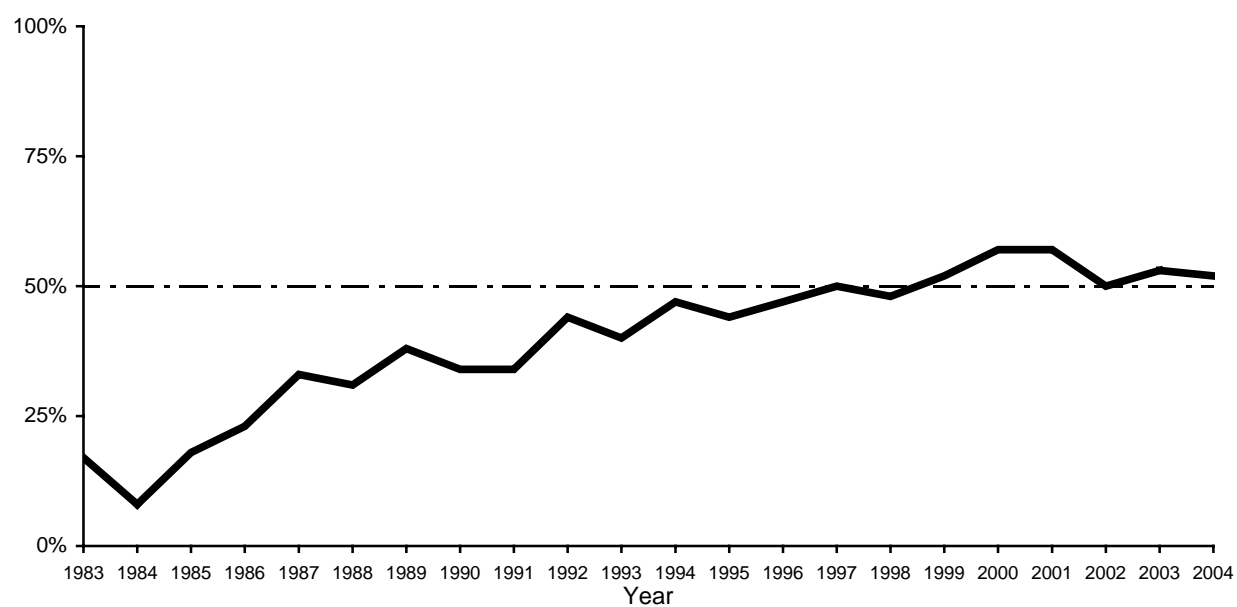


Figure A6. HIV infections by race/ethnicity and year of report, Wisconsin, cases reported through 2004

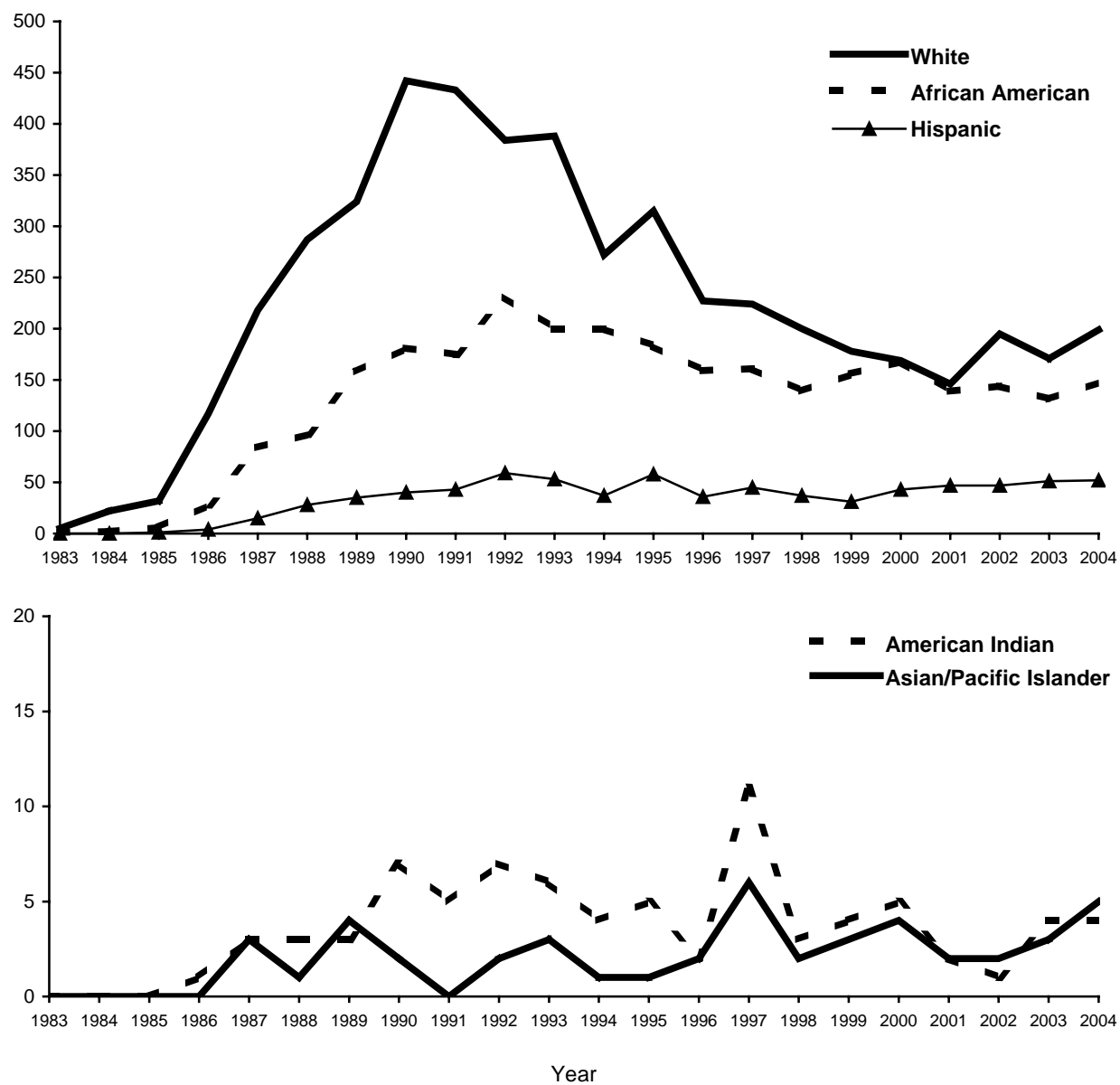


Figure A7. Average annual rate per 100,000 population of reported HIV infection, by geographic region, Wisconsin, cases reported 2000-2004

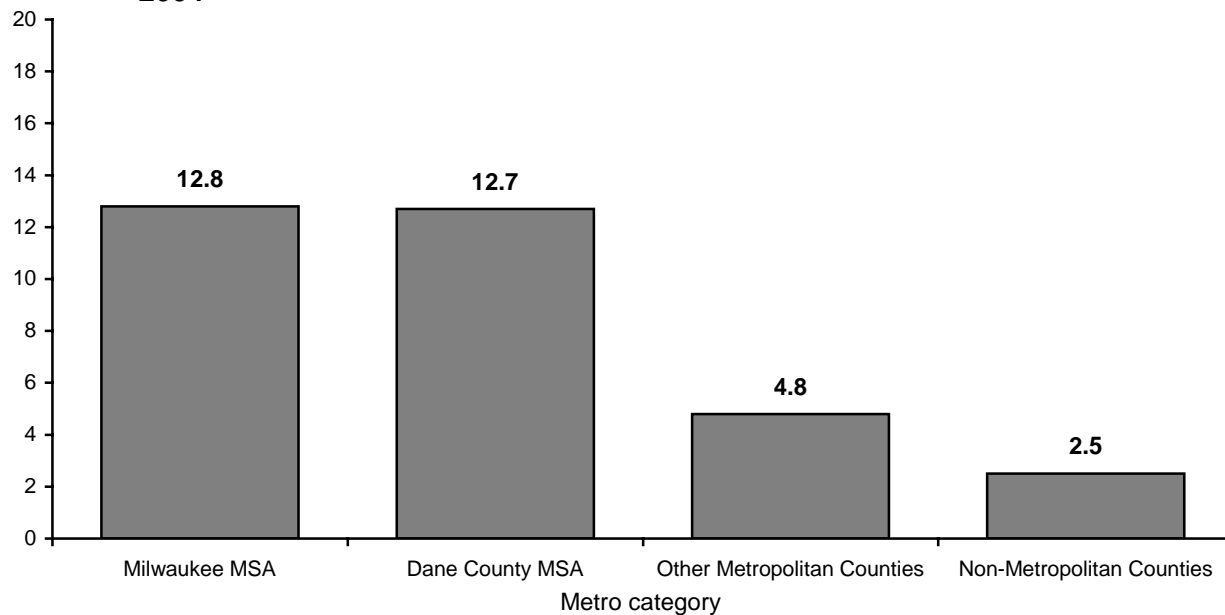
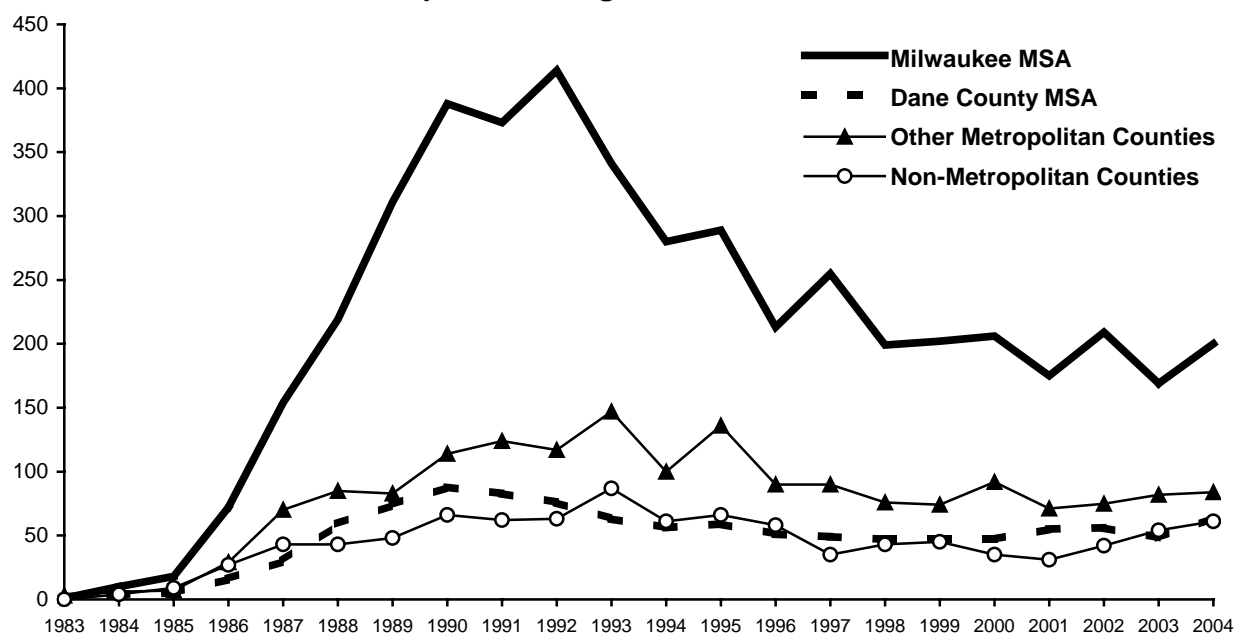


Figure A8. HIV infections by year of report and by geographic region, Wisconsin, cases reported through 2004



Wisconsin HIV/AIDS Surveillance Summary

Cases reported 1983 through 2004

Area: Statewide

I. Reported HIV infection

	Cumulative		Reported 2000 - 2004		Presumed alive	
	Cases	Percent	Cases	Percent	Cases	Percent
Total						
Cases	8,743	100.0%	1,895	100.0%	5,367	100.0%
Deaths	3,376	38.6%	122	6.4%	-	-
Risk Exposure Categories						
Men who have sex with men	4,559	52.1%	856	45.2%	2,518	46.9%
Injecting drug use	1,273	14.6%	204	10.8%	740	13.8%
Men who have sex with men and inject drugs	582	6.7%	107	5.6%	357	6.7%
Hemophilia/Coagulation Disorder	119	1.4%	2	0.1%	44	0.8%
High-risk Heterosexual Contact	1,044	11.9%	309	16.3%	789	14.7%
Transfusion-Associated	79	0.9%	7	0.4%	25	0.5%
Mother with/at Risk	79	0.9%	23	1.2%	61	1.1%
Undetermined/Other	1,008	11.5%	387	20.4%	833	15.5%
Gender						
Female	1,420	16.2%	422	22.3%	1,051	19.6%
Male	7,323	83.8%	1,473	77.7%	4,316	80.4%
Race/Ethnicity						
White	4,948	56.6%	880	46.4%	2,678	49.9%
Black	2,891	33.1%	730	38.5%	2,042	38.0%
Hispanic	762	8.7%	240	12.7%	549	10.2%
Asian/Pacific Islander	46	0.5%	16	0.8%	35	0.7%
American Indian	80	0.9%	16	0.8%	48	0.9%
Multi-racial	8	0.1%	8	0.4%	7	0.1%
Unknown/Other	8	0.1%	5	0.3%	8	0.1%
Age at Diagnosis						
Under 5	75	0.9%	20	1.1%	56	1.0%
5-12	20	0.2%	2	0.1%	15	0.3%
13-19	213	2.4%	58	3.1%	164	3.1%
20-29	2,674	30.6%	518	27.3%	1,799	33.5%
30-39	3,557	40.7%	717	37.8%	2,144	39.9%
40-49	1,610	18.4%	426	22.5%	917	17.1%
50 years and older	586	6.7%	154	8.1%	264	4.9%
Year of report						
1983	6	0.1%				
1984	24	0.3%				
1985	39	0.4%				
1986	152	1.7%				
1987	323	3.7%				
1988	417	4.8%				
1989	524	6.0%				
1990	672	7.7%				
1991	656	7.5%				
1992	683	7.8%				
1993	650	7.4%				
1994	514	5.9%				
1995	562	6.4%				
1996	426	4.9%				
1997	447	5.1%				
1998	381	4.4%				
1999	372	4.3%				
2000	389	4.4%				
2001	336	3.8%				
2002	389	4.4%				
2003	364	4.2%				
2004	417	4.8%				



Wisconsin HIV/AIDS Surveillance Summary

Cases reported 1983 through 2004

Area: Statewide

II. Reported AIDS cases

Total	Cumulative		Reported 2000 - 2004		Presumed alive	
	Cases	Percent	Cases	Percent	Cases	Percent
Cases	5,690	100.0%	1,366	100.0%	2,590	100.0%
Deaths	3,100	54.5%	230	16.8%	-	-
Risk Exposure Categories						
Men who have sex with men	3,332	58.6%	649	47.5%	1,360	52.5%
Injecting drug use	857	15.1%	209	15.3%	403	15.6%
Men who have sex with men and inject drugs	410	7.2%	93	6.8%	199	7.7%
Hemophilia/Coagulation Disorder	90	1.6%	2	0.1%	23	0.9%
High-risk Heterosexual Contact	615	10.8%	234	17.1%	377	14.6%
Transfusion-Associated	56	1.0%	9	0.7%	13	0.5%
Mother with/at Risk	46	0.8%	12	0.9%	29	1.1%
Undetermined/Other	284	5.0%	158	11.6%	186	7.2%
Gender						
Female	758	13.3%	277	20.3%	435	16.8%
Male	4,932	86.7%	1,089	79.7%	2,155	83.2%
Race/Ethnicity						
White	3,439	60.4%	622	45.5%	1,338	51.7%
Black	1,683	29.6%	553	40.5%	923	35.6%
Hispanic	490	8.6%	160	11.7%	292	11.3%
Asian/Pacific Islander	24	0.4%	12	0.9%	13	0.5%
American Indian	50	0.9%	15	1.1%	21	0.8%
Multi-racial	4	0.1%	4	0.3%	3	0.1%
Unknown/Other	0	0.0%	0	0.0%	0	0.0%
Age at Diagnosis						
Under 5	37	0.7%	7	0.5%	22	0.8%
5-12	10	0.2%	4	0.3%	6	0.2%
13-19	46	0.8%	12	0.9%	28	1.1%
20-29	1,040	18.3%	192	14.1%	454	17.5%
30-39	2,602	45.7%	565	41.4%	1,194	46.1%
40-49	1,398	24.6%	428	31.3%	671	25.9%
50 years and older	557	9.8%	158	11.6%	215	8.3%
Year of report						
1983	6	0.1%				
1984	22	0.4%				
1985	33	0.6%				
1986	72	1.3%				
1987	120	2.1%				
1988	148	2.6%				
1989	176	3.1%				
1990	259	4.6%				
1991	252	4.4%				
1992	304	5.3%				
1993	809	14.2%				
1994	483	8.5%				
1995	453	8.0%				
1996	347	6.1%				
1997	340	6.0%				
1998	273	4.8%				
1999	227	4.0%				
2000	336	5.9%				
2001	259	4.6%				
2002	268	4.7%				
2003	237	4.2%				
2004	266	4.7%				

